Abstract

Objective. To study the relationship between light absorption measurements of PM2.5 at various distances from heavy traffic roads and diesel vehicle counts in Mexico City. Materials and methods. PM2.5 samples were obtained from June 2003-June 2005 in three MCMA regions. Light absorption (babs) in a subset of PM2.5 samples was determined. We evaluated the effect of distance and diesel vehicle counts to heavy traffic roads on PM2.5 babs using generalized estimating equation models. Results. Median PM2.5 babs measurements significantly decrease as distance from heavy traffic roads increases (p<0.002); levels decreased by 7% (CI95% 0.9-14) for each 100 additional meters from heavy traffic roads. Our model predicts that PM2.5 babs measurements would increase by 20% (CI95% 3-38) as the hourly heavy diesel vehicle count increases by 150 per hour. Conclusion. PM2.5 babs measurements are significantly associated with distance from motorways and traffic density and therefore can be used to assess human exposure to traffic related emissions.

Keywords

Carbon, vehicle emissions, roads, diesel exhaust, Mexico.